Amendments to the Specification

Previous Amendments

Pages 26-52 of the original specification were previously deleted.

Figs. 6-32B were previously added.

Present Amendments

A substitute specification is attached hereto, having pages 1-33, to replace originally filed specification pages 1-25 and 53-60.

Please enter the following amendments to the indicated paragraphs of the attached substitute specification:

On page 1, before the section titled "Field of the Invention", please insert the following paragraph:

This application is a continuation of U.S. Patent Application No. 09/667, 423, filed September 21, 2000, now U.S. Patent No. 6,622,130, which is a continuation of U.S. Patent Application No. 09/000,264, filed May 15, 1998, now U.S. Patent No. 6,157,918, which are both incorporated herein in their entireties.

Please use the following paragraph to replace paragraph number 0018:

Fig. 2b is an alternative hardware platform that does not rely on a centralised hub data processing unit; [[and]]

Please use the following paragraph to replace paragraph number 0021:

Fig. 4 is a timeline showing the steps of Example II; [[and]]

Insert the following paragraphs after paragraph number 0022:

Figs. 6 to 19B show charts associated with Example I;

Figs. 20 to 27B show charts associated with Example II; and

Figs. 28 to 32B show charts associated with Example III.

Please use the following paragraph to replace paragraph number 0036:

The timeline depicting the steps in the contract from the first step, Application Specification, to the final step, Contract Settlement, is shown in Fig. 3. The pages designated ~~charts A1 - A6~~ Figs. 6 to 11B contain detailed explanatory charts supporting Fig. 3. These pages are to be read together with the following description.

Please use the following paragraph to replace paragraph number 0037:

Looking at the first step in the timeline, Application Specification. in conjunction with ~~chart A1~~ Fig. 6, we see that BLC Inc established a contract APP (Application ID 001) on 91.06.03.17.00.00 (that is, 5pm on June 3, 1991) to deal with investment. The application involves a pricing and matching objective function of: "maximise pre-tax expected return on consideration investment". As a system instruction this means: identify a counterparty (or counterparties) who have defined pricing and limit parameters which, when combined with the ordering party's specified consideration , will yield an entitlement payout shape that maximises the ordering party's pre-tax expected return on consideration investment subject to whatever match constraints the ordering party and/or counterparty has specified. Application ID 001 supports a range of products.

Please use the following paragraph to replace paragraph number 0038:

Looking at the second step in the timeline, Product Specification, in conjunction with ~~chart A2~~ Fig. 7, we see that BLC Inc was also product sponsor of Product 10061 at the same time (91.06.03.17.00.00). This product relates to the market termed Stock Indices and to the sub-market termed PTSE 75. The maturity date for Product 10061 is 96.06.03.17.00.00.00. The consideration for a specific contract involving Product 10061 is in the form of commercial bank deposits denominated in Australian dollars. The entitlement is also in the form of commercial bank deposits denominated in Australian

dollars, payable (if necessary) immediately after the Product's specified maturity date/time.

Please use the following paragraph to replace paragraph number 0040:

Looking at the fourth step in the timeline, Primary Order Specification, in conjunction with ~~chart A3~~ Fig. 8, it can be seen that an ordering party, Abbotts & Taylor, is seeking a contract, from an offering party, in Product 10061 at that time (95.01.01.17.37.06.00). ~~Chart A3~~ Fig. 8 shows the specific parameters that Abbotts & Taylor has defined for the contract it is seeking at this time, including a desired investment consideration amount of A$ 51,920. For this investment of A$ 51,920, Abbotts & Taylor has specified a minimum present value expected return of A$ 54,000 together with a preparedness to accept a worst case outcome of loss of 28 per cent of the investment, that is A$ 14,480.

Please use the following paragraph to replace paragraph number 0042:

Looking at the fifth step in the timeline, Order Specification Pricing and Contract Specification Limits, in conjunction with ~~chart A4~~ Figs. 9A and 9B, the potential counterparty No. 1 Abrahamsons. has provided registering data in the form of assessed probabilities of occurrence. a discount rate from the time of maturity to the present day, a flat commission rate. and a maximum negative entitlement amount. Abrahamsons'

pricing parameters indicate that their appropriate defined circumstances ID for an ordering party such as Abbotts & Taylor is 26, which implies a commission rate of 1.25 a discount rate of 10.00% pa, a particular set of component product prices (as shown) and a particular set of assessed probabilities of occurrence (as shown). It can further be seen that the system 20 determines, for Abrahamsons, a feasible set of net contingent entitlement amounts both Abrahamsons and Abbotts & Taylor would judge worthwhile given their specified parameters (as will be described in greater detail presently). This occurs at 95.01.01.17.38.02.00. The form of the calculation is included in ~~chart A4~~ Figs. 9A and 9B and results in an implicit contract bid price of A$ 51,920, the same as Abbotts & Taylor's desired investment amount. which Abrahamsons' parameters calculate will yield them a desired base margin on the contract of A$ 4,580.

Please use the following paragraph to replace paragraph number 0044:

1. A capped, downward sloping (45-degree) potential entitlement payout, embodied by ~~chart A4~~ Figs. 9A and 9B. Note that in this and subsequent charts the potential entitlement payout is recognized by the potential counterparty Abrahamsons as the (negative) mirror image of the (positive) entitlement payout that the ordering party Abbott & Taylor would receive.

Please use the following paragraph to replace paragraph number 0045:

2. A second capped, downward sloping (45-degree) potential entitlement payout embodied by ~~chart A5~~ Figs. 10A and 10B.

Please use the following paragraph to replace paragraph number 0046:

3. A capped, perpendicular (90-degree) potential entitlement payout embodied by ~~chart A6~~ Figs. 11A and 11B.

Please use the following paragraph to replace paragraph number 0047:

4. A second capped perpendicular (90-degree) potential entitlement payout embodied by ~~chart A7~~ Figs. 12A and 12B.

Please use the following paragraph to replace paragraph number 0048:

In all four feasible sets, the minimum entitlement amount for Abbotts & Taylor (the ordering party) is A$ 37,440. This amount represents 72 per cent of Abbott & Taylor's investment, the amount it specified as the minimum entitlement it was prepared

to accept for the contract. This was specified by Abbotts & Taylor in terms of an investment loss limit of 28 per cent (~~chart A3~~ Fig. 8).

Please use the following paragraph to replace paragraph number 0049:

~~Chart A8 shows~~ Figs. 13A and 13B show in summary form all four feasible sets of contingent entitlement payouts to Abbotts & Taylor, from Abrahamsons' perspective. The system 20 produced these potential contracts between Abrahamsons and Abbotts & Taylor in the following manner. First, the system successively combines on a trial basis all possible combinations of entitlement attributes, namely "height" and "depth" of entitlement amounts and contingent payout range of feasible product definition values or "x-axis values", to reach a counterparty bid price for each combination. Simultaneously, all combinations that do not produce a bid price equivalent to the ordering party's specified investment amount (in this case A$ 51,920) are rejected. These results can be reached by various sophisticated heuristic and operations research-based methods as well as by the simple trial-and-error search process described here.

Please use the following paragraph to replace paragraph number 0050:

Still looking at the fifth step in the timeline, in conjunction with ~~chart A9~~ Figs. 14A and 14B, it can be seen that Carpenters Inc's pricing parameters indicate that their appropriate defined circumstances ID for an ordering party such as Abbotts & Taylor is

17, which implies a commission rate of 1.30%, a discount rate of 9.80% pa, a particular set of component product prices (as shown) and a particular set of assessed probabilities of occurrence (as shown). As before, [[The]] the system determines a feasible set of net contingent entitlement amounts both Carpenters Inc and Abbotts & Taylor would judge worthwhile given their specified parameters. This occurs at 95.01.01.17.38.02.00, (note that these contingent entitlement amounts differ from the amounts determined using Abrahamsons' parameters), and results in an implicit contract bid price of A$ 51,920, the same as Abbotts & Taylor's desired investment amount, which Carpenters Inc's parameters calculate will yield them a desired base margin on the contract of A$ 5,610.

Please use the following paragraph to replace paragraph number 0052:

1. A capped, downward sloping (45-degree) potential entitlement payout, embodied by ~~chart A9~~ Figs. 14A and 14B. Note that in this and subsequent charts the potential entitlement payout is recognised by the potential counter-party Carpenters Inc as the (negative) mirror image of the (positive) entitlement payout that the ordering party Abbott & Taylor would receive.

Please use the following paragraph to replace paragraph number 0053:

2. A second capped, downward sloping (45-degree) potential entitlement payout embodied by ~~chart A10~~ Figs. 15A and 15B.

Please use the following paragraph to replace paragraph number 0054:

3. A capped perpendicular (90-degree) potential entitlement payout embodied by ~~chart A11~~ Figs. 16A and 16B.

Please use the following paragraph to replace paragraph number 0055:

4. A second capped, perpendicular (90-degree) potential entitlement payout embodied by ~~chart A12~~ Figs. 17A and 17B.

Please use the following paragraph to replace paragraph number 0056:

In all four feasible sets, the minimum entitlement amount for Abbott & Taylor (the ordering party) is A$ 37,440. This amount represents 72 per cent of Abbott & Taylor's investment, the amount it specified as the minimum entitlement it was prepared to accept for the contract. This was specified by Abbotts & Taylor in terms of an investment loss limit of 28 per cent (~~chart A3~~ Fig. 8).

Please use the following paragraph to replace paragraph number 0057:

~~Chart A13~~ Figs. 18A and 18B shows in summary form all four feasible sets of contingent entitlement payouts to Abbotts & Taylor, from Carpenters Inc's perspective.

The system produced these potential contracts between Carpenters Inc and Abbotts & Taylor in the following manner. First, the system successively combines on a trial basis all possible combinations of entitlement attributes, namely "height" and "depth" of entitlement amounts and contingent payout range of feasible product definition values or "x-axis values", to reach a counter-party bid price for each combination. Simultaneously, all combinations that do not produce a bid price equivalent to the ordering party's specified investment amount (in this case A$ 51,920) are rejected.

Please use the following paragraph to replace paragraph number 0058:

Looking at the sixth step in the timeline, Order Matching, and at ~~chart A14~~ Figs. 19A and 19B, it can be seen that the system 20 assesses the expected return of the eight contingent entitlement payout bids from Abrahamsons and Carpenters Inc. This is performed by applying each of the derived counterparty templates to Abbotts & Taylor's assessed probabilities of occurrence for each outcome. Each probability is multiplied by the elemental entitlement, and the products summed to give an implied entitlement, described as the "Expected Return Present Value" in ~~chart A14~~ Figs. 19A and 19B. The implied entitlement then is subtracted from the investment amount to give the "net return". From Abbotts & Taylor's perspective, the bid of Abrahamsons termed Offer No. 4 (A$ 57,312) is a superior offering to all other bids, yielding Abbotts & Taylor a net return on investment of A$ 5,392. This leads to a formal matching of Abbotts & Taylor's

order by Abrahamsons at 95.01.01.17.38.07.00, involving Abbotts & Taylor's original specified investment consideration amount of A$ 51,920.

Please use the following paragraph to replace paragraph number 0072:

A timeline depicting the steps in the contract from the first step, Application Specification, to the final step, Contract Settlement, is shown in Fig. 4 and further supported by ~~charts B1-B8~~ Figs. 20 to 27B.

Please use the following paragraph to replace paragraph number 0073:

Looking at the first step in the timeline, Application Specification, in conjunction with ~~chart B1~~ Fig. 20, we see that BLC Inc established a Contract APP (Application ID 001) on 91.06.03.17.00.00 (that is, at 5 pm on June 3, 1991) to deal with investment. The application involves a pricing and matching objective function of: "maximise pre-tax expected return on consideration investment". As a system instruction this means: identify a counterparty (or counterparties) who have defined pricing parameters and contract, product and portfolio limits which, when combined with the ordering party's specified consideration, will yield an entitlement payout that is not contingent on the outcome of the product phenomenon and maximises the ordering party's pre-tax expected return on investment, subject to whatever match constraints the ordering party and/or counterparty have specified. Application ID 001 supports a range of products.

Please use the following paragraph to replace paragraph number 0074:

Looking at the second step in the timeline, Product Specification, in conjunction with ~~chart B2~~ Fig. 21, we see that BLC [[inc]] Inc was also the product sponsor of Product 10061 at the same time (91.06.03.17.00.00). This product relates to the market for stock indices. The maturity date for Product 10061 is 96.06.03.17.00.00.00. The submarket is the PTSE 75 stock index. The consideration for a specific contract involving Product 10061 is in the form of money (commercial bank deposits denominated in Australian dollars). The entitlement payout is also in the form of commercial bank deposits denominated in Australian dollars, payable, if necessary, after the product's specified maturity date/time.

Please use the following paragraph to replace paragraph number 0076:

Looking at the fourth step in the timeline, Primary Order Specification, in conjunction with ~~chart B3~~ Fig. 22, it can be seen that an ordering party, Abbotts & Taylor, is seeking a contract from an offering party in Product 10061 at that time (95.01.01.17.37.06.00). ~~Chart B3~~ Fig. 22 shows the parameters that Abbotts & Taylor has specified for the contract it is seeking at this time, including a desired investment consideration of A$ 51,920. For this investment, Abbotts & Taylor has specified a minimum present value expected return of A$ 54,000 based on a discount rate of 11 per cent per annum. In the specification, Abbotts & Taylor has constrained the system's

determination of possible payout shapes to one general class of payout shape, namely, a straight line, where the gradient of the graph of entitlement (y-axis) against outcome (x-axis) is zero.

Please use the following paragraph to replace paragraph number 0077:

Looking at the fifth step in the timeline, Order Specification Pricing, in conjunction with ~~charts B4 and B5, it can be seen (chart B4)~~ Figs. 25A, 25B, and 26, it can be seen (Figs. 25A and 25B) that the potential counterparty Abrahamsons provided registering data in the form of assessed probabilities of occurrence, a discount rate from the time of maturity to the present day, a flat commission rate and a maximum negative entitlement amount. Abrahamsons' pricing parameters indicate its appropriate defined circumstances ID for an ordering party such as Abbotts & Taylor is 26, which implies a commission rate of 1.25 per cent, a discount rate of 10 per cent per annum, a particular set of component product prices (as shown) and a particular set of assessed probabilities of occurrence (as shown). The system 20 determines, for Abrahamsons. a feasible set of equal net entitlement amounts that represent both Abrahamsons' best possible bid and a possibility for Abbotts & Taylor given their specified parameters. The calculated entitlement matching the consideration is $57,280. The form of the calculation is included in ~~chart B4~~ Figs. 23A and 23B and results in an implicit contract bid price of A$51,920, the same as Abbotts & Taylor's desired investment amount, which

Abrahamsons' parameters calculate will yield it a desired base margin on the contract of A$2.019. This determination occurs at 95.01.01.17.38.02.00.

Please use the following paragraph to replace paragraph number 0078:

~~Chart B5~~ Fig. 24 shows the feasible set of equal contingent entitlement payouts to Abbotts & Taylor, from Abrahamsons' perspective, in graphical form. The system 20 generated this potential contract between Abrahamsons and Abbotts & Taylor in the following manner. First, the system successively trialed individually all possible entitlement amounts to reach a counterparty bid price equal to the ordering party's consideration (investment). Simultaneously, all amounts that did not produce a bid price equal to the ordering party's specified investment amount (in this case A$51,920) were rejected. As in Example 1, these results could be reached by various sophisticated heuristic and operations research based methods as well as by the simple trial-and-error search process described here.

Please use the following paragraph to replace paragraph number 0079:

Still looking at the fifth step in the timeline, Order Specification Pricing, in conjunction with ~~charts B6 and B7, it can be seen (chart B6)~~ Figs. 25A, 25B, and 26, it can be seen (Figs. 25A and 25B) that the potential counterparty Carpenters Inc provided registering data in the form of assessed probabilities of occurrence. a discount rate from

the time of maturity to the present day, a flat commission rate and a maximum negative entitlement amount. Carpenters Inc's pricing parameters indicate its appropriate defined circumstances ID for an ordering party such as Abbotts & Taylor is 17, which implies a commission rate of 1.30 per cent, a discount rate of 9.8 per cent per annum, a particular set of component product prices (as shown) and a particular set of assessed probabilities of occurrence (as shown). The system 20 determines, for Carpenters Inc. a feasible set of equal net entitlement amounts that represent both Carpenters Inc best possible bid and a possibility for Abbotts & Taylor given their specified parameters. The calculated entitlement matching the consideration is A$57,860 (note that this entitlement amount differs from the amount determined by the system 20 using Abrahamsons' parameters). The form of the calculation is included in ~~chart B6~~ Figs. 25A and 25B and results in an implicit contract bid price of A$51,920, the same as Abbotts & Taylor's desired investment amount which Carpenters Inc's parameters calculate will yield it a desired base margin on the contract of A$1,550. This determination occurs at 95.01.01.17.38.02.00.

Please use the following paragraph to replace paragraph number 0080:

~~Chart B7~~ Fig. 26 shows the feasible set of equal contingent entitlement payouts to Abbotts & Taylor, from Carpenters Inc's perspective, in graphical form. The system 20 generated this potential contract between Carpenters Inc and Abbott & Taylor in the following manner. First, the system successively trialed individually all possible

entitlement amounts to reach a counterparty bid price. Simultaneously, all amounts that did not produce a bid price equal to the ordering party's specified investment amount (in this case A$51,920) were rejected. These results could be reached by various sophisticated heuristic and operations research based methods as well as by the simple trial-and-error search process described here.

Please use the following paragraph to replace paragraph number 0081:

Looking at the sixth step in the timeline, Primary Order Matching (~~chart B8~~ Figs. 27A and 27B), it can be seen that the system 20 assessed the expected return to Abbotts & Taylor on the two entitlement payout bids from Abrahamsons and Carpenters Inc, respectively. Abrahamson's bid of A$57,280 yields an expected return to Abbotts & Taylor of A$42,730 and Carpenters Inc's bid of A$57,860 yields an expected return of A$43,164. Both amounts are below Abbotts & Taylor's specified minimum expected return of A$54,000. In addition, both bids would result in a negative net return on investment to Abbotts & Taylor of (A$9,190) and (A$8,756) respectively. Therefore the order matching fails.

Please use the following paragraph to replace paragraph number 0089:

A timeline depicting the steps in the contract from the first step, Application Specification, to the final step, Contract Settlement, is shown in Fig. 5 and further supported by ~~charts C1-C5~~ Figs. 28-32B.

Please use the following paragraph to replace paragraph number 0090:

Looking at the first step in the timeline, Application Specification, in conjunction with ~~chart C1~~ Fig. 28, we see that BLC Inc established a Contract APP (Application ID 201) on 91.06.03.17.00.00 (that is, at 5 pm on June 3, 1991) to deal with investment. The application involves a pricing and matching objective function of: "maximise pre-tax expected return on consideration/entitlement investment". Application ID 201 supports a range of products.

Please use the following paragraph to replace paragraph number 0091:

Looking at the second step in the timeline, Product Specification, in conjunction with ~~chart C2~~ Fig. 29, we see that BLC [[inc]] Inc was also the product sponsor of Product 11099 at the same time (91.06.03.17.00.00). This product relates to the market of immediate exchange. The maturity date for contracts in Product 11099 is "simultaneous with contract matching". The consideration for a specific contract

involving Product 11099 is in the form of money (commercial bank deposits denominated in Australian dollars). The entitlement payout is in the form of commercial bank deposits denominated in US dollars, payable immediately at contract matching; that is, the product matures on contract matching.

Please use the following paragraph to replace paragraph number 0093:

Looking at the fourth step in the timeline, Primary Order Specification, in conjunction with ~~chart C3~~ Fig. 30, it can be seen that an ordering party, Abbotts & Taylor, is seeking a contract from an offering party in Product 11099 at that time (92.06.03.17.00.00.00). ~~Chart C3~~ Fig. 30 shows the parameters that Abbotts & Taylor has specified for the contract it is seeking at this time, namely a desired investment consideration of A$102,900 to be exchanged as soon as possible for an entitlement amount of no less than US$70,000.

Please use the following paragraph to replace paragraph number 0094:

As can be seen in ~~chart C4~~ Figs. 31A and 31B, because contract maturity is simultaneous with contract matching, there are no feasible product definition values (that is, possible contingent outcomes for the PTSE 75 phenomenon). Abrahamsons therefore submits only an entitlement/consideration exchange rate and a per annum commission rate. The component product values are, by definition, unity.

Please use the following paragraph to replace paragraph number 0095:

Looking at the fifth step in the timeline, Order Specification Pricing, in conjunction with ~~chart C4~~ Figs. 31A and 31B, it can be seen that the system 20 determines that the entitlement amount that the potential counterparty Abrahamsons judges to be ideal given its specified parameters is US$84,000. This determination occurs at 92.06.03.17.38.02.00. Abrahamsons' pricing parameters specify an exchange rate of 1.210, a commission rate of 1.25 per cent and a single assessed probability of one (1) (discount (interest) rate and component product prices being irrelevant in this case). Abrahamsons' entitlement bid of US$84,000 is therefore above Abbotts & Taylor's specified minimum entitlement amount of US$70,000.

Please use the following paragraph to replace paragraph number 0096:

Still looking at the fifth step in the timeline, Order Specification Pricing, in conjunction with ~~chart C5~~ Figs. 32A and 32B, it can be seen that the system 20 determines that the entitlement amount that the potential counterparty Carpenters Inc judges to be ideal given its specified parameters is US$82,000. This determination occurs at 92.06.03.17.38.02.00. Carpenters Inc's pricing parameters specify an exchange rate of 1.239, a commission rate of 1.30 per cent and a single assessed probability of one (1) (discount (interest) rate and component product prices again being irrelevant in this

case). Abrahamsons' entitlement bid of US$82,000 is therefore also above Abbotts & Taylor's specified minimum entitlement amount of US$70,000.